CLAIMS

---

1. A method of processing an auscultation signal, said auscultation signal being divided into a plurality of signal segments each having an individual duration of time, said signal segments being processed into an output signal of successive signal segments, said signal segments being processed such that at least one, preferably all signal segments are repeated at least once in said output signal,

characterized in that

each signal segment is established such that the duration of time of substantially all the signal segments is less than a limit of 50 ms.

2. A method of processing an auscultation signal according to claim 1, characterized in that the auscultation signal is filtered iteratively by means of an iterative filtering process until the duration of time of substantially all the signal segments is less than the limit.

3. A method of processing an auscultation signal according to claim 2, characterized in that the iterative filtering process is terminated when the filtered signal does not comprise signal segments having a duration of time which is longer than the limit.

4. A method of processing an auscultation signal according to ~~claims 1-3~~ Claim 1, characterized in that the limit is less than 40 ms, preferably 30 ms.

5. A method of processing an auscultation signal according to claims 1-4, characterized in that the auscultation signal is pre-filtered iteratively by means of a high-pass filter until the duration of time of signal segments is less than the limit.

6. A method of processing an auscultation signal according to claim 5, characterized in that the output signal is post-filtered iteratively with a filter having an transfer function corresponding to the inverse amplitude transfer function of the high-pass filter.

7. A method of processing an auscultation signal according to claims 3-5, characterized in that the iterative filtering process is terminated when the auscultation signal has been filtered a specified number of times and that an indicator signal indicating termination of the filtering process is provided.

8. A method of processing an auscultation signal according to claims 1-7, characterized in that signal segments having a relatively short duration of time are patched together to form a coherent segment comprising at least three zero-crossings, which coherent segment is repeated at least once.

9. A method of processing an auscultation signal, according to claims 1-8, characterized in that the auscultation signal is divided into signal segments in zero crossings.

10. A method of processing an auscultation signal according to claims 1-9, characterized in that the auscultation signal is divided into signal segments such that the gradients of neighboring signal segments of the output signal are substantially equal, and wherein the neighboring signal segments are level-compensated.

11. A method of processing an auscultation signal according to ~~claims 1-10,~~ Claim 1 characterized in that the signal divided segments are multiplied or filtered by means of a window function such that the transitions between neighbouring signal segments are smoothed.

12. A method of processing an auscultation signal according to ~~claims 1-11,~~ Claim 1 characterized in that signal segments in the output signal are reversed in time.

13. A method of processing an auscultation signal according to ~~claims 1-12,~~ Claim 1 characterized in that signal segments in the output signal are mirrored about a time axis.

14. A method of processing an auscultation signal according to ~~claims 1-13,~~ Claim 1 characterized in that the auscultation signal is pre-filtered by a high-pass filter such that further zero crossings may be obtained.

~~15.~~ An apparatus for processing an auscultation signal, the apparatus comprising signal processing means for dividing the auscultation signal into a plurality of signal segments each having an individual duration of time, said signal segments being processed into an output signal of successive signal segments, said signal segments being processed such that at least one, preferably all signal segments are repeated at least once in said output signal

characterized in that

said apparatus further comprises means for establishing each signal segment such that the duration of time of substantially all the signal segments is less than a limit of 50 ms.

16. An apparatus according to claim 15, characterized in that the apparatus comprises means for filtering the auscultation signal iteratively by means of an iterative filtering means until the duration of time of substantially all the signal segments is less than the limit.

17. An apparatus according to claim 16, characterized in that the iterative filtering means is interrupted when the filtered signal does not comprise signal segments having a duration of time which is longer than the limit.

18. An apparatus according to ~~claims 15-17~~ claim 15, characterized in that the limit is less than 40 ms, preferably 30 ms.

19. An apparatus according to ~~claims 15-19~~ claim 15, characterized in that the apparatus comprises a high-pass filter for pre-filtering the auscultation signal iteratively until the duration of time of signal segments is less than the limit.

20. An apparatus according to claim 19, characterized in that apparatus comprises a filter having an amplitude transfer function corresponding to the inverse amplitude transfer function of the high-pass filter, for post-filtering the auscultation signal.

21. An apparatus according to ~~claims 17-20~~ claim 17, characterized in that the iterative filtering means is interrupted when the auscultation signal has been filtered a specified number of times and that an indicator signal indicating termination of the filtering process is provided.

22. A method of processing an auscultation signal according to ~~claims 15-21~~ claim 15, characterized in that signal seg-

ments having a relatively short duration of time are patched together to form a coherent segment comprising at least three zero-crossings, which coherent segment is repeated at least once.

23. An apparatus according to ~~claims 15-22,~~ Claim 15 characterized in that the apparatus comprises means for dividing the auscultation signal into signal segments in zero crossings.

24. An apparatus according to ~~claims 15-23,~~ Claim 15 characterized in that the apparatus comprises means for dividing the auscultation signal into signal segments such that the gradients of neighboring signal segments of the output signal are substantially equal, and wherein the neighboring signal segments are level-compensated.

25. An apparatus according to ~~claims 15-24,~~ Claim 15 characterized in that the apparatus comprises means for multiplying or filtering the signal divided segments by a window function such that the transitions between neighbouring signal segments are smoothed.

26. An apparatus according to ~~claims 15-25,~~ Claim 15 characterized in that the apparatus comprises means for reversing the signal segments in the output signal in time.

27. An apparatus according to ~~claims 15-26,~~ Claim 15 characterized in that the apparatus comprises means for mirroring the signal segments in the output signal about a time axis.

28. An apparatus according to ~~claims 15-27,~~ Claim 15 characterized in that the apparatus comprises a high-pass filter for pre-filtering the auscultation signal such that further zero crossings may be obtained.

sub B10

29. An electronic stethoscope comprising at least one input transducer and at least one output transducer, said stethoscope comprising signal processing means for dividing said input signal in time into a plurality of signal segments each having an individual duration of time, said signal segments being processed into an output signal of successive signal segments, said signal segments being processed in such a way that at least one, preferably all signal segments are repeated at least once in said output signal

characterized in that

said stethoscope further comprises means for establishing each signal segment such that the duration of time of substantially all the signal segments is less than 50 ms and said stethoscope further comprising means for reproducing said output signal by means of said output transducers.